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DR. JOHN N. McDONNELL

Head, Health Supplies and Drug Division
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FEBRUARY, 1942

No. 2

CONTENTS

Our Cover:

John N. McDonnell 38

Editorial 39

Articles:

Medical and Pharmaceutical Applications of Pectin. By Karl J. Gold-
ner 42

The Coincidence of Candida and Intestinal Parasites. By Francis C.
Lawler, Dorothy V. Omundson and Ernest W. Donald 47

Salts of Diethylisopropylamine. By Saul Caspe 56

The New Production Goals of the Department of Agriculture 58

Selected Abstracts 61

Solid Extracts 64

Book Reviews 67

Our Contributors This Month 68

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O U R C O V E R

DR. JOHN N. McDONNELL

FACED with serious shortages in strategic drugs and medicinal agents, due to the almost complete curtailment of imports and the large demands for such materials by the armed forces, the drug industry and the government recognized some time ago the need for an immediate and complete study of the situation. Accordingly, the subject of our cover this month, Dr. John N. McDonnell, whose experience over many phases of the health field prepared him adequately for the task, was given authority to set up a research group to assemble at once all available data concerning the present supply and demand for drugs and allied chemicals.

The classification of raw and finished drug materials into those essential for civilian and military health, and the control of such as are deemed of lesser importance is to be followed by a study of possible expansion of present manufacturing and processing facilities to care for the emergency demands of foreign and domestic agencies.

Dr. McDonnell is a graduate of the Philadelphia College of Pharmacy and Science in Pharmacy and also in Bacteriology, and is a member of its teaching staff. He has, in addition, pursued graduate studies in Economics and Finance at the University of Pennsylvania. In 1936, he was appointed editor of the *American Professional Pharmacist* and *Medical Times*. He has also been actively associated with the industrial and professional phases of the drug field. He holds fellowship or membership in a number of national pharmaceutical, chemical, public health and scientific bodies.

The work of the group headed by Dr. McDonnell will serve to provide complete factual knowledge of the entire drug industry to the other divisions of the WPB to insure complete medicinal supplies for the nation's armed forces and to guarantee supplies of bulk materials and other products so that production of civilian drug necessities will be maintained.

E D I T O R I A L

NO one who gives serious thought to the present world conflict can help but have a profound realization of the tragedy that has befallen the world and a consciousness of the present and future sorrow and travail which must be endured before we emerge from this trying era. On this we are all agreed and Americans are facing it with both realization and determination.

On the other hand, only a few individuals are willing to concede that we ourselves are not entirely blameless for some of the present difficulties by reason of our past errors and poor judgment. That of course is, as the saying goes, "water over the dam," and no good will result to our present effort by casting recriminations at leaders of the past who, although they might have avoided much of the present-day chaos, did not. It is better to believe that they did at least what in their honest opinion was best under the circumstances and to realize that hindsight on our part is indeed no proof of perspicacity.

All of us, however, can by a careful and truthful analysis of ourselves come to certain definite conclusions which if squarely faced can so improve us that at least some gains will result from the war effort, even though the price may be costly. In the years since the last war this country has built up an entire set of false values based on fundamentally wrong concepts and practices. In place of the homely virtues, in which we all are presumed to have great faith and belief, we have substituted selfish materialism which has completely disregarded things which are really important. We have developed in this country too many persons who weigh each and every question on the scale of personal gain, rather than public welfare. Pressure groups have demanded this and that of legislators until now political expediency is the deciding factor instead of actual merit. Men have become interested not in what helps their needy and deserving fellow-man but only in more and yet more personal gain, even in

Pharmacy's duty to the Nation, to the public and to itself is herein called to your attention by the Editor.

the face of wealth and power far beyond their capacity to either use or benefit by them.

There is no substitute for reverence of God and a morality and code of behavior toward our fellow-man based on this concept. One cannot coerce or legislate men into such a pattern; it must come from within each individual from the realization of his responsibility to both God and man, a responsibility willingly and gladly met regardless of its cost.

It may be that the stern realities and exigencies of war will so impress upon all of us man's complete dependence on man that for a long time to come we shall not forget this interdependence and the foolishness of any short-sighted policy which does not take cognizance of this proven truth.

In the field of Pharmacy as elsewhere selfish interest has found fallow soil and it would indeed be a most timely occasion for all to realize that here, as in society as a whole, when one organization or group or individual is made to suffer the whole body of Pharmacy suffers. No permanent good can ever come to one section of our profession at the expense of another. Never has cooperation, friendship, tolerance and mutual aid been more sorely needed. In times like these we have enough problems which are not of our own making without creating still others by ill-considered words or deeds.

The task is difficult and the going hard. Cooperation will make our contribution greater and our travail less.

LINWOOD F. TICE.



MEDICAL AND PHARMACEUTICAL APPLICATIONS OF PECTIN

By Karl J. Goldner

DURING recent years considerable interest has been exhibited in the medical and pharmaceutical applications of pectin. Two principal medical uses, of particular interest to pharmacists, are in the treatment of bed-sores and indolent ulcers and in the treatment of diarrhea.

The use of pastes in the treatment of bed-sores and ulcers of various kinds was introduced by Fantus and Dyniewicz at the Cook County Hospital (1). The term "paste" is used here to mean a water-soluble gel and not a thick ointment. The pastes were prepared both with tragacanth and pectin as the base, and it seemed to make little difference which was used. Excellent results were obtained. Not only was the period of hospitalization shortened, but the cost of materials and the time required for changing dressings were greatly reduced (2).

Other workers used pectin pastes with success. Some of these, however, employed a pectin which contained nickel, and, for a time, it was thought that perhaps the beneficial results might be ascribed to the antiseptic action of the nickel. Tompkins and co-workers (3) used both nickel pectin and pure pectin and showed that there was no difference in the results obtained.

A study of pectin pastes containing the sulfonamide drugs was begun in the fall of 1941 at the John Gaston Hospital at Memphis under the direction of Dr. Frederick W. Fiedler, Chief of the Surgery Staff of the Out-Patient Department. His results will be published later. The pastes were prepared at the School of Pharmacy of the University of Tennessee. No reports could be found of the use of the sulfonamide drugs in pectin pastes.

Since sulfanilamide is reported soluble to the extent of 1 Gm. in 125 cc. of water at room temperature, a sulfanilamide paste was first prepared according to the following formula:

Sulfanilamide	8 Gm.
Pectin*	75 Gm.
Glycerin	180 Gm.
Benzoic Acid	2 Gm.
Ringer's Solution	735 Gm.

To make about 1000 Gm.

The sulfanilamide and pectin are rubbed smooth with glycerin and to this is added a hot solution of benzoic acid in Ringer's Solution. This must be added all at once and with efficient stirring in order to prevent lumping. For the preparation of large quantities, a strong stirrer which will reach the sides and bottom of the container is necessary. For 500 Gm. batches, a malted milk mixer works well. For 100 to 200 Gm. batches, a mortar and pestle makes a smooth paste without lumps. It was found advantageous to use boiling Ringer's Solution, as it makes a smoother and more stable preparation than does a cold solution.

Pastes of sulfathiazole have also been prepared according to the same formula. The solubility of sulfathiazole is less, being about 1 Gm. in 1670 cc. of water. However, the excess sulfathiazole does not separate out, and it was decided to keep the concentration the same as for sulfanilamide. The sodium salt is much more soluble, but the solutions are very alkaline. The sodium salt, therefore, cannot be used as pectin pastes lose their consistency above pH 4.5.

Sulfanilamide is, of course, used primarily for streptococcic infections and sulfathiazole for staphylococcic infections, particularly osteomyelitis. The method of application is that reported by Fantus and Dyneiwicz (1). The ulcer crater is completely filled with the paste and is then covered with a piece of water-proof cellophane quite a bit larger than the ulcer. A frame of adhesive plaster 2 inches wide is employed to fasten the cellophane. It is of course necessary that the patient does not lie upon this surface as his weight is liable to break the seal. When the patient's skin is so sensitive as not to tolerate adhesive plaster, the cellophane can be kept in place by a binder around the body. When the paste can be properly confined by an adhesive plaster frame, the dressing need not be changed for two or three days. In other cases it may have to be changed daily. It is very necessary that the paste not be allowed to dry out.

*Furnished through the courtesy of the California Fruit Growers' Exchange.

Winters and Tompkins (4) in this country first suggested the use of pectin and agar in the treatment of diarrhea. For some years apples had been claimed valuable in this condition (5) (6) (7) (8) (9) (10) (11), but the reasons underlying their success were vague. Malyoth (12), Baumann (13) and Currado (14) believe that pectin and cellulose are the active ingredients.

On this basis, Winters and Tompkins prepared a substitute for the apple diet. It consisted of pectin, agar, and dextrin and maltose, boiled with milk or water and poured into custard cups to cool. Excellent results were reported by them and by Kutscher and Blumberg (15). Their formula might easily be prepared by a pharmacist at the doctor's order. It consisted of

Pectin	6.3 Gm.
Agar	4.3 Gm.
Dextri-Maltose No. 1	89.4 Gm.

A diet was made by placing 16 level tablespoonfuls of the powder in a double boiler with a pint or 24 ounces of whole milk and cooked for fifteen minutes, poured into eight custard cups, and allowed to cool. One or more cupfuls was used at each feeding. The thicker preparation was used for older children and the thinner for infants on the bottle. For older children, chocolate or fruit flavors were added. The prepared gel keeps well in an icebox.

Pectin has been suggested for use in pharmacy as an ointment base and as an emulsifying agent. In a paper, "Pectin as a Substitute for Foreign Salve Bases," Mosig (16) gives several formulas for what he calls "skin varnishes" and proposes that pectin be used as a substitute for fatty ointment bases. However, since pectin pastes dry quickly to form a film resembling a collodion film, it is difficult to see how they could be generally acceptable as ointment bases. They may have a limited use as protective coverings, and so some of Mosig's formulas are reprinted here.

1) Zinc Oxide-Talcum Skin

Varnish

Pectin	1.0 Gm.
Zinc Oxide	15.0 Gm.
Talcum	15.0 Gm.
Glycerin	15.0 Gm.
Dist. Water qs ad	100.0 Gm.

Prepared in the warm way

2) Ichthammol Varnish

Pectin	4.00 Gm.
Ichthammol	20.0 Gm.
Glycerin	10.0 Gm.
Dist. Water qs ad	100.0 Gm.

Prepared in the cold way

3) Cooling Skin Varnish

Pectin	4.0 Gm.
Solution of Aluminum	
Acetate	10.0 Gm.
Glycerin	20.0 Gm.
Dist. Water qs ad	100.0 Gm.
Prepared in the cold way	

4) Cooling Skin Varnish

Pectin	2.5 Gm.
Alcohol	10.0 Gm.
Menthol	1.0 Gm.
Dist. Water qs ad	100.0 Gm.
Prepared in the warm way	

5) Sulfur Varnish

Pectin	1.0 Gm.
Cinnabar	2.0 Gm.
Precipitated Sulfur	10.0 Gm.
Zinc Oxide	15.0 Gm.
Glycerin	15.0 Gm.
Dist. Water qs ad	100.0 Gm.
Prepared in the warm way	

The method of preparation was as follows: The pectin was rubbed with a little alcohol and then, in case only liquid medicinals were used, these and the water were added. The mixture was either warmed on a waterbath with good stirring or allowed to remain without heating, but with stirring, until swelling had taken place. In case solids were to be incorporated, the powder was rubbed smooth with glycerin and, together with the necessary water, added to the pectin, previously rubbed with alcohol. The use of glycerin is recommended as it gives a pliable salve.

The use of pectin as an emulsifying agent was reported by Brandrup, who employed a mixture of pectin, tragacanth, acacia, and gelatin (17) and later pectin, gelatin, and saponin (18). Osborn and Dekay (19) were unable to prepare emulsions with pectin alone.

Experimental

Emulsions of apricot kernel oil, cod liver oil, and mineral oil were prepared with acacia as the emulsifying agent, with pectin, and with mixtures of the two. One gram of pectin is approximately equivalent to 12.5 Gm. of acacia. In each case 100 cc. of emulsion were made in a mortar, and 50 cc. of this passed through a hand homogenizer. In all cases 25 cc. of water were used in preparing the primary emulsion as it was found that no emulsion could be formed with any other quantity. Water at higher temperatures was tried

because pectin hydrates relatively slow. It was found that water at room temperature was best, even though, in one case, it was necessary to allow the mixture to stand ten minutes for hydration to take place. The size of the oil globules was determined by microscopic examination. Relative viscosity was determined by finding the time required for a lead sphere, one-eighth inch in diameter and weighing 0.35 Gm., to fall through a 30 cm. column of the emulsion.

TABLE I
Emulsions of Apricot Kernel Oil

Emulsifying agent	Method	Average size of globules in microns	Appearance	Viscosity in seconds	Appearance in 17 hours
Acacia 12.5 Gm.	Mortar	7.4	White	3.6	v. slight cr.
	Homogen.	3.9	White	4.0	no creaming
Pectin 1 Gm.	Mortar	14.3	White	5.8	v. slight cr.
	Homogen.	8.8	White	6.3	no creaming
Acacia 6.25 Gm.)	Mortar	12.0	White	3.5	creaming
Pectin 0.50 Gm.)	Homogen.	5.0	White	4.5	no creaming
Acacia 6.25 Gm.)	Mortar	No emulsion formed			
Pectin 0.25 Gm.)	Homogen.	5.0	White	4.7	no creaming

Emulsions of Cod Liver Oil

Acacia 12.5 Gm.	Mortar	8.5	White	3.5	slight cr.
	Homogen.	4.2	White	4.1	no creaming
Pectin 1 Gm.	Mortar	No emulsion formed			
	Homogen.	50	White		cracked
Acacia 6.25 Gm.)	Mortar	35	Yellow	3.8	creaming
Pectin 0.50 Gm.)	Homogen.	25	White	4.3	slight cr.
Acacia 6.25 Gm.)	Mortar	26	Yellow	2.6	creaming
Pectin 0.25 Gm.)	Homogen.	9.7	White	3.0	slight cr.

Emulsions of Mineral Oil

Acacia 12.5 Gm.	Mortar	14	White	3.2	creaming
	Homogen.	7	White	4.0	no creaming
Pectin 1 Gm.	Mortar	No emulsion formed			
	Homogen.	50	White	20	slight cr.
Pectin 1.25 Gm.	Mortar	No emulsion formed			
	Homogen.	15	White	23	no creaming
Pectin 1.5 Gm.	Mortar	No emulsion formed			
	Homogen.	Too thick to be practical			
Acacia 6.25 Gm.)	Mortar	2 to 50	Grey	3.8	creaming
Pectin 0.50 Gm.)	Homogen.	2 to 50	White	4.0	slight cr.

Discussion

Pectin produces a coarse emulsion and is not a satisfactory emulsifying agent when used alone. When one-half of the acacia is replaced by a small amount of pectin, the emulsion produced is satisfactory, even though microscopic examination shows the globules to be somewhat larger than are produced by acacia alone. This might become of practical importance since acacia has already risen in price and will undoubtedly become increasingly difficult to obtain.

Summary

1. The literature on the use of pectin pastes in the treatment of bed-sores and indolent ulcers and in the treatment of diarrhea has been reviewed.

2. Formulas and working directions are given for the preparation of sulfonamide-pectin pastes.

3. The use of pectin in pharmacy as an ointment base and as an emulsifying agent has been reviewed.

4. Emulsions of apricot kernel oil, cod liver oil, and mineral oil have been prepared. Pectin alone was not a satisfactory emulsifying agent. When one-half of the acacia was replaced by a small amount of pectin, a satisfactory emulsion was produced, although the oil globules were somewhat larger than were produced by acacia alone.

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THE COINCIDENCE OF CANDIDA* AND INTESTINAL PARASITES**

By Francis C. Lawler, Dorothy V. Omundson and
Ernest W. Donald***

THE occurrence of *Candida* in the gastro-intestinal tract of man has received varying degrees of attention, likewise the presence of various parasites has been noted. As to the incidence of *Candida*, reports have varied for many reasons, not the least of which has been the lack of a uniformity in specific identification. Ashford (1) and others thought sprue was due to *Candida psilosis*, while Benham (2) showed that the *Candida psilosis* of Ashford was identical with the *Candida albicans* usually associated with thrush. Benham and Hopkins (3) using their own method in examining 100 apparently normal individuals from a *Candida* incidence of 36%, of which *C. albicans* constituted 18%; *C. parakrusei* 2%; *C. krusei* 13%; and 3% were not identified. Anderson (4) examined 175 individuals and found one to have *C. psilosis* (a definite sprue case), while in 98 apparently normal people 46% were shown to harbor yeast-like organisms not *C. psilosis*. Hannibal and Boyd (5) doubted whether *Candida* was implicated in sprue, inasmuch as 50% of their controls were harboring similar organisms. Fleisher and Wachowiak (6) found *Candida* in 6% of their series of normal stools. Mackie and Chitre (7), from among 71 sprue cases and 76 non-sprue cases, found approximately the same incidence of *Candida*. Ashford (8) found 15.7% of 178 normal young males were positive for yeast-like organisms. Schnoor (9) found 33.1% of individuals positive for *Candida* among 314 examined of which 16.9% were *C. albicans*, 6% *C. parakrusei*, 5.7% *krusei* and 4% *C. tropicalis*. Pasricha and Lal (10) examined 220 fecal samples and found 65% to have yeast-like organisms, 60 of these having had intestinal disturbances while 160 were apparently normals.

*Following the decision of the Medical Mycologists in session at The Third International Congress of Microbiology in September, 1939, the generic term *Candida* is used as well as the suggested species.

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Various investigators have ascertained the parasitic incidence to be found in feces. Some investigators have been concerned only with frank pathogens and others with the normal incidence of all intestinal organisms. Williamson, Kaplan and Geiger (11), Tonney, Hoeft and Spector (12), Creswell and Wallace (13), Johnstone, David and Reed (14), Johnstone and Iverson (15), Sapero and Johnson (16), Meleney (17), Hinshaw and Showers (18), McDaniels, Burton and Arnold (19), Wenrich, Stabler and Arnett (20), Tsuchiya and Ted Jean (25), Dienst (21), and McMullen and Gray (22) have all determined the incidence of *Endamoeba histolytica*, finding it to vary from 1.2% in 408 examinations to 11.3% in 206 examinations. The latter three determined incidence of the several intestinal parasites usually encountered in fecal samples and the results will be shown in a tabular comparison with the findings of this paper when the results are discussed.

Much conjecture has been made as to the significance of *Candida* in the gastro-intestinal tract such as whether it ever has primary pathogenic significance or whether *Candida* are significant only after primary tissue resistance has been broken down. Among factors associated with tissue alteration are the intestinal parasites, thus it was with this thought in mind that a determination of the coincidence of *Candida* and intestinal parasites was initiated. In order to obtain as accurate a picture as possible of the normal incidence of intestinal parasites and *Candida*, it was thought advisable to ascertain the findings in 100 apparently normal individuals preparatory to abnormal studies among hospital routine patients to be reported in a future paper. Further, it was felt that three determinations should be made at an interval of approximately one week, and that probably a more reliable picture would be obtained as to the coincidence of *Candida* and intestinal parasites. Thus, the incidence, classification and pathogenicity of the *Candida* were determined as well as the intestinal parasite incidence.

Methods of Study

The method of identification for the *Candida* was essentially that of Martin, Jones, Yao and Lee (23), and for the parasite incidence that of Faust et al. (24) with very few modifications. One hundred and two individuals were examined according to the following routine.

The individuals were predominantly medical students and in apparently good health.

- (A) Fecal samples were collected in one-pint "Seal Rite" cardboard containers and placed in an 8° C. icebox until examined. A series of three specimens, at intervals of approximately one week, were collected. A fecal suspension of one gram in nine of sterile saline was prepared. Three Sabouraud's glucose agar plates were prepared from each specimen as follows: (1) Streak plate: 10 cubic centimeters of Sabouraud's Dextrose Agar was allowed to harden in a 100 x 15 millimeter petri plate and inoculated with $\frac{1}{20}$ cubic centimeter of fecal suspension and streaking accomplished by means of a sterile bent glass rod. (2) Pour plate: Into a 100 x 15 millimeter petri plate $\frac{1}{20}$ cubic centimeter of fecal suspension was placed and Sabouraud's Dextrose Agar in an amount of ten cubic centimeters poured therein and distribution effected. (3) Large Pour Plate: Into a special 150 x 20 millimeter petri plate 0.5 cubic centimeters of fecal suspension was placed, and 30 cubic centimeters of Sabouraud's Dextrose Agar poured therein and distribution effected.
- (B) All plates were incubated for 48 hours at 37° C. and then kept at room temperature for several days. Yeast-like colonies morphologically, as well as microscopically, were fished and subcultured on Sabouraud's Dextrose Agar from each positive yeast-like plate. In many cases, several (three) colonies were subcultured from each positive plate. All subcultures were placed in the icebox at 8° C. until they were identified.
- (C) The following outline was used in the identification of the subcultures:
1. The cultures were transferred to Sabouraud's glucose acid broth and incubated at 37° C. for 48 hours. The type of surface growth was noted.
 2. The broth cultures were streaked on blood agar plates and incubated at 37° C. for ten days. The colonies were described carefully.

3. The cultures were transferred to Sabouraud's Conservation Medium and to corn meal agar slants which were subsequently examined for asci. These cultures were kept at room temperature.
4. The growth on Sabouraud's Conservation Agar slants was subcultured on this same medium for two to three generations.
5. The growth from (4) was streaked on corn meal agar slides and kept in a moist chamber for ten days at room temperature. The slides were examined microscopically at the end of this time for details of mycelial growth.
6. Cultures from the sugar-free Sabouraud's Conservation medium were planted in 2% glucose, maltose, lactose, and sucrose broth and covered with sterile vaseline. Brom thymol blue was the indicator used in all sugars. All sugar broths were incubated at 37° C. for ten days and examined for the production of acid and gas.

CULTURE CHART*

Organism	Broth	Blood Agar	Ferments		Mycelium
<i>Candida albicans</i>	—	Convex colonies 1.5 mm. in diam. gray-white, dull	dextrose sucrose lactose maltose	A & G A & G — A & G	Well developed and branched. Chlamdospores
<i>Candida parakruseii</i>	—	Convex colonies 0.6-0.8 mm. in diam. Pearly white	dextrose sucrose lactose maltose	A & G — — —	Formed only with difficulty
<i>Candida tropicalis</i>	surface growth 2-3 mm. bubbles	Convex colonies 2 mm. in diam. mycelial fringe gray-white	dextrose sucrose lactose maltose	A & G A & G — A & G	Formed readily Numerous spores
<i>Candida kruseii</i>	surface growth 5-6 mm.	Colonies vary in size and shape	dextrose sucrose lactose maltose	A & G — — —	Naked threads. Spores arranged like crossed-sticks
<i>Candida pseudo-tropicalis</i>	—	Variable colony Often 0.5 mm. in diameter	dextrose sucrose lactose maltose	A & G A & G A & G —	Poorly developed
<i>Candida stellatoidea</i>	—	Colony has thick tapering arms	dextrose sucrose lactose maltose	A & G — — A & G	Well developed with dense, ball-like cluster of spores

*The findings of Martin et al. (23) have been liberally placed in this chart along with other findings. Colonial appearance on Sabouraud's agar has been essentially as noted by Martin et al. (23), Schnoor (9), and others.

7. The intestinal parasites were determined according to the method of Faust et al. (24) with the exception that a higher specific gravity zinc sulphate was used than that recommended by these authors. By this method only helminth eggs and protozoan cysts are detected and trophozoites are not detected.

Results and Discussion

One hundred and two individuals were examined for the presence of *Candida* and intestinal parasites. Table I shows the group distribution.

TABLE I

Group Distribution of Candida and Intestinal Parasites Among 102 Normals

Parasite negative	48	Parasite negative	2
<i>Candida</i> negative		<i>Candida tropicalis</i>	
<i>Endolimax nana</i>	3	Parasite negative	1
<i>Candida stellatoidea</i>		<i>Candida krusei</i>	
<i>Endolimax nana</i>	7	<i>Candida stellatoidea</i>	
<i>Candida</i> negative		<i>Candida</i> variant	
<i>Endamoeba coli</i>	1	<i>Endamoeba histolytica</i>	1
<i>Candida krusei</i>		<i>Endamoeba coli</i>	
<i>Endamoeba coli</i>	5	<i>Candida parakrusei</i>	
<i>Endolimax nana</i>		<i>Endolimax nana</i>	1
<i>Candida</i> negative		<i>Candida krusei</i>	
<i>Endamoeba coli</i>	6	<i>Candida stellatoidea</i>	
<i>Candida</i> negative		<i>Endamoeba coli</i>	1
<i>Endolimax nana</i>	1	<i>Candida tropicalis</i>	
<i>Endamoeba williamsi</i>		<i>Candida krusei</i>	
<i>Candida</i> negative		<i>Endamoeba histolytica</i>	1
Parasite negative	1	<i>Endamoeba coli</i>	
<i>Candida tropicalis</i>		<i>Endolimax nana</i>	
<i>Candida stellatoidea</i>		<i>Chilomastix mesnili</i>	
<i>Endamoeba coli</i>	1	<i>Candida</i> negative	
<i>Candida</i> variant		<i>Endamoeba coli</i>	1
Parasite negative	3	<i>Endolimax nana</i>	
<i>Candida krusei</i>		<i>Candida stellatoidea</i>	
<i>Giardia lamblia</i>	1	<i>Endamoeba histolytica</i>	1
<i>Candida krusei</i>		<i>Endolimax nana</i>	
<i>Candida stellatoidea</i>		<i>Candida</i> variant	
Parasite negative	5	<i>Giardia lamblia</i>	2
<i>Candida stellatoidea</i>		<i>Candida</i> negative	
		Parasite negative	2
		<i>Candida</i> variant	

Endamoeba coli	2	Parasite negative	1
Candida stellatoidea		Candida kruseii	
		Candida parakruseii	
Endamoeba coli	1	Parasite negative	1
Giardia lamblia		Candida parakruseii	
Candida negative			
Endolimax nana	1	Parasite negative	1
Candida kruseii		Candida tropicalis	
		Candida parakruseii	

From Table I it can be noted that there were 28 combinations of Candida and parasite species appearing together. There were 48, or 47.06% that were parasite negative as well as Candida negative; 17, or 16.66% were parasite negative and Candida positive; 23 or 22.55% parasite positive and Candida negative; 14, or 13.72% parasite positive as well as Candida positive. Thus, there was a total of 30.38% Candida positive and 36.27% parasite positive. As a comparison with the recent findings of Schnoor (9) there was a close correlation as he reported an incidence of 33.10% Candida in 314 normal fecal samples. The parasite negative-Candida positive group (16.66%) is very similar to the parasite positive-Candida positive (13.72%) being apparently less than 3% in difference.

TABLE II

*Comparison of Our Intestinal Protozoa Findings With Those of 3 Other Workers**

	McMullen (22)	Dienst (21)	Tsuchiya (25)	Lawler, Omundson & Donald
Endamoeba Histolytica	10%	4.0%	2.1%	2.94%
Endamoeba coli	47%	7.0%	14.4%	20.59%
Endolimax nana	14%	10.0%	3.7%	19.6%
Iodamoeba williamsi	5%	0.4%	1.6%	0.98%
Dienamoeba fragilis	0	0	0	0
Chilomastix mesnili	2%	0	1.2%	1.96%
Giardia lamblia	7%	0	2.1%	4.90%

Table II which shows the comparative incidence of the intestinal protozoa (no helminths were found in this series) tends to emphasize the variant results reported by different workers. Probably the chief reason for the differences lies in the group sampled, for instance, this present series is composed primarily of medical students in an urban environment, while that of McMullen & Gray (22) was composed of a young, rural age group, thus higher percentage incidence figures

*Where an "o" appears in this Table II it indicates either failure to find the organisms or it was not reported in the series, as was the case with the other investigators.

would naturally be expected. A factor to be borne in mind in this series is that each individual was examined three times and the intestinal protozoa incidence is probably quite accurate, inasmuch as it is recognized that one examination only on an individual is rarely over 70% to 80% accurate in picking up infections.

In the correlation of intestinal parasite positives with *Candida*, 37 of the 102 individuals were positive; 26 of these had single infections, distributed as follows: 13 had *Endamoeba coli* with 5 positive for *Candida* and 8 negative; 10 had *Endolimax nana* with 4 positive for *Candida* and 6 negative; 3 had *Giardia lamblia* with 1 positive for *Candida* and 2 negative. Eleven had multiple infections of intestinal parasites distributed as follows: 5 had *Endamoeba coli* and *Endolimax nana* and were *Candida* negative; 2 had *Endamoeba coli* and *Endolimax nana* and were *Candida* positive; 1 had *Iodamoeba wilhamsi* and *Endolimax nana* and was *Candida* negative; 1 had *Endamoeba coli* and *Endamoeba histolytica* being *Candida* positive; 1 had *Endamoeba coli* and *Giardia lamblia* being *Candida* negative, while 1 had *Endamoeba coli*, *Endamoeba histolytica*, *Chilomastix mesnili*, and *Endolimax nana* being *Candida* negative. Thus of the 37 parasite positives, 13 (35.15%) were *Candida* positive, while 24 (64.86%) were *Candida* negative, indicating the lack of significance of *Candida* and intestinal parasites together in the gastro-intestinal tract.

Among the 31 individuals that were *Candida* positive, 12 combinations were found, namely, *Candida stellatoidea* 9 times *Candida krusei* 5 times, *Candida stellatoidea* and *Candida tropicalis* once, *Candida stellatoidea* and *Candida krusei* 3 times, *Candida parakrusei* twice, *Candida krusei* and *Candida tropicalis* once, *Candida tropicalis* once, *Candida krusei* and *Candida parakrusei* once, a *Candida* variant 5 times, *Candida stellatoidea* and a *Candida* variant once, and *Candida tropicalis* with a variant once. It is interesting to note that *Candida albicans* was not found which is not in agreement with other workers, and for which we have no explanation.

Pathogenicity experiments using rabbits as the test animal and utilizing intravenous inoculations did not cause typical moniliasis (candidiasis?) with the strains isolated in this series. *Candida tropicalis* did cause a more or less sub-acute condition from which all recovered. It was felt that rabbits were not a necessity in classifying *Candida*, which is in agreement with the findings of Burt and Ketchum (26).

Representative cultures of *Candida albicans*, *kruseii*, *parakruseii* and *tropicalis* were subjected to agglutination and precipitin reactions according to the method described by Lamb and Lamb (27), but in our hands the method did not prove a positive aid in identification due to numerous cross reactions, so because of the detailed absorption experiments that would be necessary it was discarded as a means of identification of the *Candida* of this series.

In the primary isolations, as has been found by others, Schnoor (9), Pasricha and Lal (10), the number of yeast-like colonies developing on the plates is far from constant, and varied in this series from 1 to over 100, however, excessive numbers were the exception rather than the rule. It was true, however, that 11 of the 31 positive *Candida* specimens developed 15 or more colonies on a petri plate. Further, it was noted that the pour plates prepared in the 150 x 20 millimeter petri plates utilizing a 0.5 cubic centimeter inoculum was by far the most satisfactory insofar as the number of colonies that developed. It should be pointed out that 50 (49.02%) of the 102 individuals examined developed yeast-like colonies, but 19 of these could not be classified among the *Candida*. This figure is somewhat less than the figure reported recently by Pasricha and Lal (10), of 65%.

Summary

(1) The coincidence of *Candida* and intestinal parasites in the gastro-intestinal tract of 102 normal individuals has been determined.

(2) *Candida albicans* was not found in the series; the species found were *Candida kruseii* (9.8%), *tropicalis* (4.9%), *parakruseii* (3.9%), *stellatoidea* (14.7%), *mortifera* (0.0%), and unidentified variants (4.9%).

(3) *Candida* was found in 30.38% of the individuals examined and intestinal parasites were found in 36.27%.

(4) The lack of coincidence between *Candida* and intestinal parasites in the gastro-intestinal tract of normal man is suggested.

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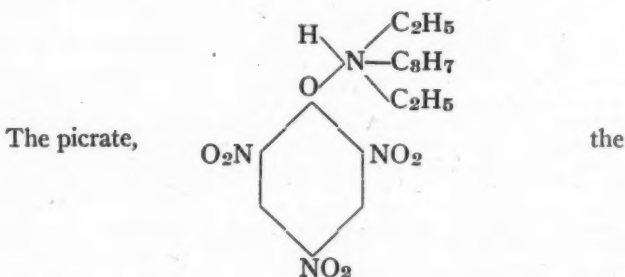
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SALTS OF DIETHYLISOPROPYLAMINE

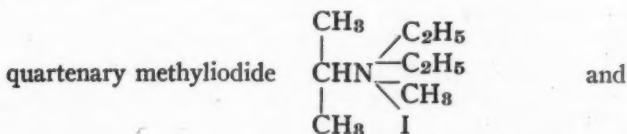
By Saul Caspe

THE previously unrecorded tertiary amine, diethylisopropylamine has been prepared and the chemical reaction mechanism has been reported in the literature (1) (2).

The importance of this compound as an intermediate in the preparation of pharmaceuticals possessing anesthetic and analgesic properties should be evaluated. The limited purpose of this paper is to describe the preparation and study of simple salts of this recent compound.



hydrochloride, $C_3H_7N(C_2H_5)_2HCl$ the



the chlorplatinate $[C_3H_7N(C_2H_5)_2HCl]_2PtCl_4$ have all been made.

Experimental

The picrate is made by adding a picric acid solution to a 75% alcoholic solution of diethylisopropylamine. The salt was filtered and washed with alcohol and water. The residue was dried at 65° C. and recrystallized from 75% alcohol.

The hydrochloride is prepared by mixing 1 cc. of diethylisopropylamine and 1 cc. of concentrated hydrochloric acid. Considerable heat of reaction evolves as well as fuming. Evaporated solution

to dryness, and dried crystals over night at 65°-75° C. Heated crystals 2 more hours at 85°-90°. The hydrochloride is very hygroscopic and should be precipitated from anhydrous ether.

The quaternary ammonium iodide is prepared by adding 0.35 cc. methyl iodide to 1 cc. of diethylisopropylamine. This reaction is rapid and is accompanied by considerable heat. The white crystals are recrystallized from alcohol, washed and dried.

The chlorplatinate is made by adding to 0.6 cc. of this tertiary amine 17 cc. of 5% H_2PtCl_6 , and the solution is diluted with alcohol to 22 cc. The solution was cooled for several days and then the beautiful yellow crystals were filtered off and washed carefully and thoroughly with alcohol.

0.040 grams of amine platinic chloride yielded 0.0120 grams of platinum residue on ignition (0.0121 grams of Pt. should be obtained theoretically).

The melting points of these salts are given in the following table:

Melting Points of Salts of Diethylisopropylamine

	<i>observed</i>	<i>corrected</i>
picrate	178-179° C.	180.6-181.6° C. sinters at 179.6° C. (corrected)
hydrochloride	57.5-59° C.	56.5-58° C.
quaternary ammonium iodide	264-265° C.	269-270° C.
chlorplatinate	206-207° C.	210.1-211.1° C. sinters at 207° C. (corrected)

The melting points were determined by use of a calibrated thermometer and heat was applied at the rate of 4° C. per minute.

The picrate melts to a dark reddish brown liquid and the chlorplatinate melts with decomposition.

Conclusions

The picrate, hydrochloride, quaternary ammonium iodide, and chlorplatinate salts of diethylisopropylamine are prepared and some of their physical properties described.

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PRODUCTION GOALS FOR 1942

No field has a greater bearing on the nation's health and efficiency than that of food. The gigantic task facing our country in supplying ourselves and our Allies with necessary food and commodities to guarantee an adequate diet is one which fortunately we are well organized to do. Our Department of Agriculture by being well organized in advance of the present emergency is meeting this challenge with a minimum of difficulty. Some of the new production goals set for the country as supplied by the Department of Agriculture are reprinted here. Great satisfaction should be felt by all that America has this capacity and that by such intelligent supervision these goals will be realized.—Ed.

INFORMATION ON 1942 PRODUCTION GOALS, ARRANGED BY CLASSES OF COMMODITIES

(The original Food for Freedom agricultural production goals for 1942 were announced September 8, 1941; the goals as revised after Pearl Harbor were announced January 16, 1942. "September goal" refers to the former. The goals provide for acreages of individual crops and numbers of individual classes of livestock. In some cases special encouragement is provided through price support; in others the supply in 1942 is likely to be adequate for needs and the goal is a statement of the expected acreage or production. The following tabulation shows how the 1942 goals compare with the actual acreage or production in 1941, as estimated on February 5, 1942, and presents a few pertinent facts about the goal or estimate for each commodity.)

OVER-ALL: The new 1942 production goals represent 119 percent of average, annual farm production in the 1935-1939 period or, with cotton, wheat, and tobacco omitted, 125 percent; production in the all-time-high year of 1941 was 113 and 116 percent, respectively, of average annual production in the 1935-39 period.

		Percentage of 1941 Acreage or Production ¹	
			DAIRY PRODUCTS
MILK:	108		125 billion pounds, same as September goal; 115,770,000,000 pounds produced in 1941. To stimulate production of cheese, evaporated milk, and dried milk, prices of these commodities are supported at 85 percent parity. Capacity production needed.
			EGGS
EGGS:	113		4.2 billion dozen compared with 4 billion dozen in September goal and a 1941 production of 3,728,000,000 dozen. Price support at 85 percent of parity. Figures include nonfarm production estimated at 10 percent of farm production.

¹ Estimated as of Feb. 5, 1942.

Percentage of 1941
Acreage or
Production ¹

MEATS

HOGS: (and Lard)	114	Slaughter of 83 million head compared with 79.3 million head in September goal and a 1941 slaughter of 72½ million head. Price support at 85 percent of parity. Lard: An increase of 300 million pounds in 1942 by raising the yield of lard from hogs slaughtered and changing relationship between lard and meat prices. Increase in hog numbers is keeping pace with the increase in demand.
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FATS AND OILS

PEANUTS:	255	5 million acres compared with 3½ million-acre September goal and a 1941 production of 1,964,000 acres. Price support on nuts for oil at 85 percent of the comparable price at beginning of the marketing year, August 1; but not less than \$82 per ton for U. S. No. 1 Spanish type, \$78 for No. 1 Runner type, and \$70 for Class A Virginia type, delivered to an approved local receiving agency. Present commodity loan on edible nuts at 85 percent of parity continued. All-out production of peanuts for oil needed.
SOYBEANS:	154	9 million acres compared with 7 million-acre September goal and with 5,855,000 acres in 1941. Price support at 85 percent of the comparable price at beginning of the marketing year, October 1; but not less than \$1.60 per bushel, farm basis, for U. S. No. 2 Yellow of recognized varieties of high oil content as designated by State agricultural experiment stations, with approval of the War Boards. Price support applies to soybeans for oil only. All-out production needed.
FLAXSEED:	134	4½ million acres compared with both a September goal and 1941 seedings of 3,367,000 acres. Price support at 85 percent of the parity price at beginning of the marketing year, June 1, but not less than \$2.10 per bushel, farm basis. Loans averaging at least \$2.10 per bushel, farm basis—with location and grade differentials.

CEREALS

WHEAT:	88	55 million acres compared with 50-55 million acres in the September goal, and with 62.4 million planted in 1941. Wheat will be released from storage stocks for feeding at prices comparable with corn, in addition to the normal feeding of 100 million bushels, in order to expand feed supplies in areas not adapted to corn and also to provide storage space for the 1942 crop. Loans at 85 percent of parity.
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¹ Estimated as of Feb. 5, 1942.

Percentage of 1941
Acreage or
Production¹

SUGAR

SUGARCANE: No limitations on plantings; no acreage restrictions; production up to processing capacity urged.

SUGAR BEETS: No limitations on plantings; no acreage restrictions; production up to processing capacity urged.

NONFOOD CROPS

COTTON:	108	Allotments same as in 1941; plantings estimated to be 25 million as compared with 22-24 million in September and 23¼ million acres in 1941. Loans at 85 percent of parity. To encourage the production of long-staple cotton premiums will be paid on staples of 1½ inch or longer.
TOBACCO:		All goals higher than September except for cigar-wrapper type; loans at 85 percent of parity. No increases in AAA allotments required; flue-cured allotments increased 10 percent in December 1941.
Flue-Cured:	115	843,000 acres; September 762,000, and 1941, 732,000 acres.
Burley:	107	383,000 acres; September 358,000, and 1941, 357,000 acres.
Other:	104	272,000 acres; September 247,000, and 1941, 261,000 acres.
WOOL:	105	An estimate of 51,200,000 sheep to be shorn, same as September estimate; 1941, 48,900,000. Yield should be 490,000,000 pounds of wool. Efficient shearing of all wool possible is desired.
TURPENTINE:	158	450,000 barrels as compared with 400,000 in September and 285,000 produced in 1941. Maximum production desired within limitations of good management.
ROSIN:	158	1½ million barrels as compared with a September estimate of 1,333,000, and 950,000 produced in 1941. Maximum production desired within limitations of good management.
LUMBER:	103	An estimate of 33.6 million board feet as compared with a 1941 production of 32½ million board feet.
PULP WOOD:	100	An estimate of 14.3 million cords as in 1941. Maximum production desired within limitations of good forest management.

¹ Estimated as of Feb. 5, 1942.

SELECTED ABSTRACTS

The Treatment of Peptic Ulcer Without Alkalis. *J. A. M. A.* 118, 38 (1942) 1. Dick and Eisele of the Department of Medicine of the University of Chicago have attempted to overthrow the time-honored belief that peptic ulcer must be treated with alkalis. They demonstrate that the attempted neutralization of gastric acidity with alkali shows results only in the exceptional case.

A comparison was taken of the free and total acid content of the gastric contents of patients receiving the Sippy alkali treatment and patients given hourly feedings of milk. The depression of acidity was as great or greater in the latter case.

It was shown to be illogical to ingest alkali continually, as in ulcer recurrences. In many instances, this would probably be more detrimental than the ulcer itself.

The authors' treatment with milk and also with cream compare favorably with other methods of treatment as shown in forty-one clinical cases. Such treatment brought about prompt disappearance of symptoms, disappearances of any occult blood from the stool, and disappearance of the X-ray crater.

Results of Serologic Tests for Syphilis in Non-Syphilitic Persons Inoculated With Malaria. L. E. Burney, M. D., J. R. S. Mays, M. D.; and A. P. Iskrant. *Amer. Jour. of Pub. Health*, 32, 39 (1942) 1. A diagnosis of asymptomatic syphilis based on positive serology alone should not be made in an area where malaria is endemic without first eliminating the possibility of coincident malarial infection.

Malaria exerts a definite influence on the specificity of the complement fixation and flocculation tests. Eleven patients inoculated with malaria gave false positive reactions by at least two different technics. Although there was some variation between the results of different technics on the same sample of blood, in general the results were consistent.

Syphilis was excluded as a cause of the positive reactions in the study by negative blood and spinal fluid serologic reactions, history, etc.

Among the chief reasons for failure to detect false positivity were probably low sensitivity of serologic tests and failure to take an adequate number of specimens over sufficiently long periods of time.

At least four weeks should have elapsed after the termination of malaria before tests were made. Serologic tests should be made at least twice before they are used as a basis for the diagnosis of asymptomatic syphilis without history.

Newer Burn Therapy. M. A. Lesser. *Drug & Cosmetic Ind.* 50, 26 (1942) 1. The basic tannic acid procedure of burn therapy has been modified in several ways. Dye-containing preparations are coming into wider use. Sulfonamides are being employed and the "envelope" method has been developed.

Surgeon Rear Admiral Wakeley of the Royal Naval Hospital, England, summarizes the treatment of burns into three major considerations:

1. The saving of life.
2. Local treatment of the burned area.
3. Preservation or restoration of the function of the parts or area involved.

Treatment with tannic acid is now largely restricted to burns on the trunk of the body. Wakely advises gentian violet jelly or cod liver oil dressings for burns of the face. The use of tannic acid with a tragacanth-glycerin base is reported. A preparation of the following type is cited as an example:

Tannic acid	5.00	per cent.
Acriflavine	0.01	" "
Tragacanth	2.3	" "
Glycerine	45.5	" "
Amyl-meta-cresol	0.0025	" "
Water to make	100.0	" "

Dye solutions (gentian violet aqueous solutions) are being used. The usual procedure is to clean the burned area with saline solution, remove dead tissue, swab with 1 or 2 per cent. gentian violet, and then follow by applying 5 per cent. tannic acid solution and 10 per

cent. silver nitrate solution. Gentian violet is being used in connection with brilliant green and acriflavine.

In the British Navy where space is at a premium, a jelly containing 1 per cent. gentian violet and 1:5000 merthiolate is used as a first aid dressing for burns.

For superficial burns Pearson, Lewis and Niven found that the local use of powdered sulfanilamide and tulle gras (gauze saturated with petroleum jelly and balsam of Peru) has been found successful. Rapid healing has resulted. The tulle grass dressings are used to eliminate pain and injury while the dressings are changed.

The "envelope method" for treating burns of extremities consists of intermittent irrigation of the burned parts with electrolytic sodium hypochlorite solutions under a waterproof envelope of coated silk. This method is easily and speedily applied; is painless; requires no dressing; promotes epithelization which is readily observed; and allows free movement of the affected parts.

Modern Advances in Cardiac Therapy. G. H. Wells, M.D., F. A. C. P., *Hahnemannian Month.* 77, 6 (1942) 1. The introduction of Digitalis leaf by William Withering has proven to be a boon to mankind. The isolation of chemically pure glucosides, the potency of which can be determined by definite chemical methods, represents the greatest advance in the pharmacology of digitalis that has occurred since the days of Withering. It enables us to obtain therapeutic effects more rapidly and with greater uniformity than has been possible with the powdered leaves and tinctures employed.

The author states that he believes it is only a question of time when the recent preparations will supersede the powdered leaves which are the form of the drug used by Withering and on which there has been practically no improvement in the last 150 years.

When digitalis fails to bring about definite diuresis in edematous patients within three or four days a mercurial diuretic is used to bring about immediate diuresis and although aminophylline, a xanthin diuretic, has been largely replaced by the mercurials, it may be advantageously used to supplement the latter in obstinate cases of dropsy.

Avitaminosis, states Dr. Wells, has a definite effect on the heart. Also, many cardiac patients present evidence of definite malnutrition and anemia and a prescribed amount of iron should accompany the diet.

SOLID EXTRACTS

Interesting Facts About Scientific Subjects

Municipal water and sewage plants need not worry about priorities for obtaining chlorine, scarce as that element may be, for the War Production Board is taking steps to insure an adequate supply. Other civilian and war industries use chlorine, too, in its uncombined state, or as calcium hypochlorite, sodium hypochlorite or chlorinated lime. For sterilization purposes they can be used interchangeably.

AJP

The War Production Board has released the formula for an inexpensive mixture to be used in pasting strips of sheeting diagonally across window panes to make them shatter proof in case of bombing attacks by the enemy.

The formula—

Wheat flour	6 ounces
Powdered alum	½ ounce
Corn syrup	4 fluid ounces
Water	2 pints

In preparing the paste, the alum and the flour are to be rubbed to a smooth mixture with the water and the syrup, and then heated quickly to boiling with constant stirring. It is to be removed from the fire at the first sign of boiling. An alternate but slower plan is to use a double boiler.

Refrigeration will preserve the paste for a few days, but a level teaspoonful of sodium benzoate should be incorporated at the same time the alum is added, if the finished product is to be kept for any length of time. This formula was referred to W. P. B. by the Philadelphia College of Pharmacy and Science.

The subject of vitamins, as everyone knows, has undergone a tremendous amount of study by scientists and near-scientists. Many theories, actual facts, and pharmaceutical products have resulted from these studies. But the research of Carl Eppert, of Wisconsin, probably produced the most peculiar result—a symphony.

Vitamins A, C and D are the subjects of three parts of the first suite of the symphony, and Vitamins B and E compose the second suite of this double theme with variations. One of the suites was a prize winner in a musical contest in Chicago. Composer Eppert made a careful study of the vitamins prior to his work on these musical compositions. The use or action of each vitamin is supposed to be the theme around which the music is written!

AJP

War may take a terrific toll in American lives in the near future. Heart diseases, too, will continue to boost mortality figures. But one of the greatest menaces to life, health and happiness is cancer. Silently, grimly, it continues on its way through fear, ignorance and delay on the part of those who are subject to it or who suspect it and tell no one. With everyone's help, however, we can and shall be victorious against this dread disease, through an intelligent and controlled point of view by each individual. Early recognition of the symptoms of cancer, and proper treatment, will do much to alleviate undue suffering, both mental and physical. The American Society for the Control of Cancer will be pleased to answer any questions in this respect.

AJP

A new alloy for making collapsible tubes has been announced by the New England Collapsible Tube Company. The new alloy is called "Sheffalloy" and it is said to be composed of available metals which are blended, tempered and toughened in the process of manufacture. Tubes made from "Sheffalloy" are claimed to be quite comparable in their appearance and uses to block tin tubes now commonly employed.

When one considers the almost unbelievable tasks that must be done as a result of our war economy the delay which seems so long is better understood. For example, the sugar ration books and instructions alone consumed 30,000 pounds of ink. Stacked end on end, the books would make a tower fifteen miles high, or if placed in a square side by side they would cover Berlin, which Washington facetiously states "is the big idea"!

AJP

According to the WPB, vitamin preparations containing more than 5000 units of Vitamin A in the daily recommended dose are to be restricted from over the counter sale. The human being cannot, unless suffering from clinical hypovitaminosis, utilize more than this amount and consequently all over this is wasted. This ruling was brought about by the shortage of Vitamin A which is due to both decreased supply and increased demand. Preparations containing more than 5000 units of A per dose will still be available for the physician and on prescription.

AJP

Women by reason of their dress are more greatly inconvenienced by cold in the winter and less by heat in the summer, according to a recent study. It has been shown by air-conditioning experts that in the winter women require a room temperature of 76 degrees for comfort, while men needed a temperature of only 72 degrees. In the summer women are quite comfortable with the indoor temperature at 80 degrees, whereas men wanted a temperature of 76 degrees. Most interesting of all was that when men dressed in women's clothing their desire for lower temperatures was lost as was women's desire for warmer environment when dressed in men's clothing. Until clothing differences are resolved the usual office debate pro and con more heat will doubtlessly go on.

BOOK REVIEWS

Of Two Recent Volumes

The Chemical Formulary. Edited by H. Bennett. xviii + 676 pages. Chemical Publishing Company, Inc., Brooklyn, N. Y., 1941. Price: \$6.00.

This book is the fifth edition of a series which present many varied formulas.

Most of the formulas do not require complicated or expensive machinery and very little technical experience.

There are formulas for adhesives, beverages, cosmetics, drugs, emulsions and dispersions, farm and garden specialties, food, inks, leather, skins, furs, lubricants, oils, fats, materials of construction, metals and metal treatment, paints, enamels, varnishes, lacquers, paper, photography, polishes, pyrotechnics and explosives, rubber, resins, plastics, waxes, soaps, cleansers, textiles, fibers and other miscellaneous preparations.

In addition there are sources of supply for chemicals. Particularly valuable is the listing of trade-name chemicals. M. O. H.

Essentials of Prescription Writing. By Cary Eggleston, M. D., Associate Professor of Clinical Medicine, Cornell University Medical College, New York City. W. B. Saunders Company, Philadelphia and London, 1942. Seventh edition, revised. 155 pages. Price: \$1.50.

The author's background of nearly thirty years' experience in teaching prescription writing to medical students has well qualified him to present the seventh edition of this pocket-sized volume.

Included in the present edition are discussions of the fundamentals of Latin grammar, the grammatical construction and writing of prescriptions, weights and measures, rules for determining dosage, vehicles, incompatibility, and modes of administration of remedial agents. Suggestions for suitable methods of prescribing official preparations are given, with references to practice prescriptions which exemplify various modes of administration.

The book may be recommended as a useful reference work for students of pharmaceutical Latin and dispensing, as well as for medical students.

A. A. DODGE.

OUR CONTRIBUTORS THIS MONTH

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Saul Caspe, B. Sc., is a consulting chemist and associate director of research of Philip Morris & Company. Mr. Caspe has pursued graduate work and research at both Columbia University and the University of Paris.



NOW ... *Digitalis* STANDARDIZED CLINICALLY *in humans*

Many attempts have been made to standardize digitalis preparations according to their toxic effects upon frogs, cats, guinea pigs, pigeons and other animals, as well as by methods using isolated hearts and heart muscle strips. None of these devices has proved satisfactory from the *therapeutic* standpoint because the action of digitalis in animals may differ from its effect in humans both qualitatively and quantitatively.

Standardization of digitalis in humans, by measuring a definite cardiac response, permits accurate comparison of the standard and the unknown in the same individual. This is not possible with existing laboratory procedures in which death of the test-animal constitutes the endpoint. Moreover, deterioration of digitalis preparations, as indicated by animal assay methods, is not substantiated by therapeutic effect in humans. Thus, animal assays do not accurately indicate therapeutic activity in humans and may result in variable clinical potency.

'Digitol' Digitalis Mulford was the first biologically assayed digitalis preparation in the United States and has been widely prescribed for more than a third of a century. It is with particular pride, therefore, that Sharp & Dohme offers to physicians Liquid 'Digitol' Digitalis Mulford and Tablets 'Digitol' Digitalis Mulford, standardized clinically in humans, as additional evidence of the constant effort to improve these products and to make them therapeutically the most *practical* digitalis preparations available.



HOW SUPPLIED: Liquid 'Digitol' Digitalis Mulford—one-ounce, sealed amber bottles. Each package includes a standardized dropper. Tablets 'Digitol' Digitalis Mulford—each tablet contains $1\frac{1}{4}$ grains (0.10 Gm.) of digitalis leaves. Bottles of 25, 100 and 1000 tablets.

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